Remarks

Reexamination and reconsideration of rejections are hereby requested.

The present invention is directed to technology allowing the use of a position-velocity (PV) table and either a shaped velocity command or trajectory to control movement of a dynamic system such as a data storage device to reduce mechanical and/or acoustic unwanted vibrations. Although some disk drives rely on PV tables to determine their inputs, the inputs can result in unwanted vibrations to the systems. The techniques presented and claimed in the present application reduce and/or limit such vibrations. In particular, independent claim 1 is directed to a control method including shaping a velocity command determined using a PV table to reduce unwanted vibrations. Independent claim 6 is directed to a control method including generating and storing a trajectory, and defining a system velocity in terms of system position and one or more additional variables, in a PV table having N>2 dimensions. Independent claim 10 is directed to a control method including generating and storing a plurality of such trajectories and independent claim 14 is directed to a control method wherein the trajectory-generating step generates the trajectory in accordance with a technique for reducing unwanted dynamic system vibrations. Independent claim 59 is directed to a method for generating a PV table by storing a trajectory generated by integrating a partial fraction expansion equation model of the dynamic system. Independent claims 30, 35, 39 and 43 are directed to apparatus embodying the novel techniques set forth in claims 1, 6, 10 and 14 respectively.

Claims 1, 2, 6-19, 22-31, 35-58, and 61 stand rejected under 35 USC § 102(b) as being anticipated by Scaramuzzo, U.S. Patent No. 5,465,035. Scaramuzzo is directed to method and apparatus for moving a member including the steps of providing parameters related a given desired position of the member, the parameters corresponding to a switch time, a final time, an acceleration amplitude, and a deceleration amplitude. These parameters are used to specify a piece-wise continuous function of time for an input signal. With respect to claim 1, the examiner refers to Scaramuzzo at column 3, lines 17-18. That section of Scaramuzzo refers to the figures. A review of the figures referred to in that section does not indicate a position-velocity table to control a dynamic system. The examiner also indicates that Scaramuzzo discloses determining a velocity command for the system using a position-velocity table and refers to column 5 at lines 29-36. This section of Scaramuzzo teaches that unwanted motion associated with changes in position and velocity of an actuator arm are reduced and/or eliminated by generating an input current command to control the current through a coil 40 as an actuator arm moves to a desired angular position. Importantly, Scaramuzzo states that the input current command is a piece-wise trigonometric profile as shown in fig. 5. It is submitted that neither the text nor fig. 5 discloses a position-velocity table. In fact, the only reference in Scaramuzzo to a lookup table occurs at column 7 at line 15. The lookup table referred to is a parameter generator, not a position-velocity table forming a material limitation of the claims.

With respect to independent claim 6, the examiner refers to Scaramuzzo at column 7, lines 34-37. The examiner indicates that this section discloses a "table having N (N>2) dimensions." A review of Scaramuzzo at column 7, lines 34-37 can find no such teaching. The examiner is asked to clarify the rejection.

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Claims 10-13 have been rejected over Scaramuzzo and the examiner refers to column 7, lines 33-57 for a teaching of a plurality of trajectories. A review of this section can find no teaching of generating a plurality of trajectories defining system velocity in terms of system position. Reconsideration is requested.

Independent claim 14 requires storing a trajectory in a position-velocity table. As stated above, a review of Scaramuzzo does not show a teaching of a position-velocity table.

Several of the dependent claims have been rejected under 35 USC § 103 as unpatentable over Scaramuzzo in view of Singhose, U.S. Patent No. 5,638,267. It is submitted that these claims are patentable in that they depend from independent claims that are patentable as discussed above.

It is noted that claim 60 is indicated to be directed to allowable subject matter. Applicant reserves the right to rewrite claim 60 into independent form at a later stage if necessary.

For the foregoing reasons, it is submitted that the pending claims are in condition for allowance and early favorable is requested.

Please credit any overpayment and/or charge any additional filing fees required under 37 CFR §§ 1.16 and 1.17 to our Deposit Account Number 03-1721.

Respectfully submitted,

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